**Stat & Data Analysis: 10.2 CW NAME: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

1. A company has set a goal of developing a battery that lasts **over** 5 hours (300 minutes) in continuous use. In a first test of a SRS of 12 of these batteries measured the following life-spans (in minutes):

321, 295, 332, 351, 281, 336, 311, 253, 270, 326, 311, 288.

* 1. Check the conditions. Assume that the life-spans of the batteries are approximately Normal.
  2. Find the mean and standard deviation of the sample (use 1 var stats!) and write them below.
  3. Is there evidence that the company has met its goal? Complete an appropriate test of significance.
  4. Create a 96% confidence interval for the mean lifespan of this type of battery. Interpret your interval.
  5. If we were to increase our confidence to 99%, what would happen to:
     1. the margin of error? ii. the confidence interval?
  6. If we were to increase our sample size to 50, what would happen to:
     1. the margin of error? ii. the confidence interval?

1. The distribution of scores of students taking the LSATs is claimed to have a mean of 521. We take a random sample of 100 incoming Harvard Law School freshman LSAT scores and find a mean of 589 and a standard deviation of 37. Since Harvard is an Ivy League school, they think their freshmen are not average law students.
   1. Check the conditions
   2. Test this theory (that Harvard students score **differently** than average students on the LSATs) at the 0.05 significance level.
   3. Create a 95% confidence interval. Interpret your interval.
2. I have a confidence interval that is (31.8, 43.0)
   1. What is the sample mean ()?
   2. What is the margin of error?
   3. BONUS: If the sample size is 100 and the std. deviation is 24.3, what is:
      1. The t\*?
      2. The level of confidence?